Coordination and Integration of a Local Roads GIS Layer for Colorado

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Overview

- CDOT's Mandate on local roads.
- Local Government Responsibilities.
- "Traditional" methods and products.
- Digital methods in use & development.
- Time to organize a workgroup?

CDOT's mandate on local roads

- Local Road Mileage Certification Program:
  - Mileage used to allocate of HUTF $.
  - $ used by 330 local govts. to maintain roads.
  - Requires annual update of DB and GIS layers.
- Transportation Planning:
  - Covers Highways and major local roads on the National Highway Planning Network.
  - Requires current GIS and road characteristic data.

Local Government Responsibilities

- Review existing HUTF inventory & GIS data
- Provide information on system changes:
  - Jurisdiction changes (e.g. Annexations)
  - Condition changes (e.g. Good to Fair)
  - Characteristic changes (e.g. widened,resurfaced)
  - New facilities and abandonments
- Certify system as of 12/31 of each year.

"Traditional" Methods

- CDOT sends maps and database listings to 330 Towns, Cities and Counties in Colo.
- Local govts. handwrite on listings, fill out forms, sketch on maps & send plats to CDOT.
- CDOT staff key-enter updates to database and table-digitize new roads to GIS layers.
- CDOT reports certified public road mileages to the Treasurer and FHWA for $ allocation.
- CDOT distributes GIS products via Internet, and database copies via email upon request.

Digital Methods

- Database only:
  - DB updates via Excel or dBase format files.
  - DB updates via MS Access 2000.
- GIS data layer updates:
  - Two separate GIS Databases Maintained.
  - Integrated/shared State/local DB and GIS.

Digital methods used for tabular inventory in 2002 update cycle

- DB updates via Excel or dBase format files (3).
  - Town of Windsor, Arapahoe Co. and City of Centennial
  - Requires local govt. to match segmentation with CDOT.
- DB updates via MS Access 2000 VBA software (42).
  - 24 Cities and 18 Counties .
  - 2003 update “taking on all comers” using MSAccess.
  - 2004 update – strong encouragement to do via AHUT.
  - 2004 update – hope to have a web version available also.

Benefits of using digital methods for tabular inventory updates

- Elimination of handwriting changes on inventory printouts and filling out system change reports.
- Reduction of data entry errors.
- Enhanced control of database contents.
- Can get mileage totals or new inventory report immediately upon completion of annual update.
- Can maintain database continuously over the year.
- Easier to synchronize segmentation with local GIS or tabular databases so that they can be linked.
- Asset inventory as a starting point for GASB 34.

Digital methods in use for GIS data layer updates

Two separate GIS Databases Maintained

- Local govt. provides GIS or CAD data in known datum, projection and coordinate system. ***VERY IMPORTANT!***
- CDOT snaps our GIS roads/cities layers to local digital data and copies any new features to CDOT layers.
- Thereafter, GIS or CAD update files are sent in annually.
- CDOT would like to use local digital centerline and/or city limits data for the annual update!

Jurisdictions Providing GIS Data

- 12 Counties and 26 municipalities have provided GIS centerlines to date.
- CDOT GIS layers have been snapped to local data from 6 Counties and 9 Municipalities (23 pending)
- We've just scratched the surface.
- For the 2004 update, we will strongly encourage local jurisdictions to provide GIS layers

Benefits of using digital methods for GIS data layer updates

- No need to find/copy/send plats.
- No need to draw new roads/boundaries on map.
- Improved accuracy.
- Opportunity for Roads/Public Works staff to enhance coordination with local GIS group.

Digital methods in development for GIS Data Layer updates

Integrated/shared State/local DB and GIS

- Many variations are possible, depending on:
  - local data availability,
  - system compatibility,
  - local capabilities, etc.
- Current Pilot Projects:

Broomfield Co.	
Weld Co.	**Lone Tree**
Otero Co.	**Rifle**
Garfield Co.	**Breckenridge**

- Willing to consider other pilot projects this year.

Benefits of developing an **Integrated** *State/Local DB and GIS*

- Some or all HUTF reporting requirements can be met as byproducts of ongoing local activities (e.g., pavement mgmt system, GIS maintenance).
- Improved accuracy of HUTF information.
- Reduced workloads for local agencies and CDOT.
- Availability of CDOT website for distribution of GIS data.

Proposed Roles as per the NSDI - National Spatial Data Infrastructure

- Local Governments:
  - "Data producer" and "Custodian".
  - "Data distributor" via whatever method, if desired.
- CDOT:
  - "Area integrator", collating and homogenizing local layers into a seamless, statewide coverage.
  - "Producer of last resort" where no local producer.
  - "Data distributor" via the CDOT web site.

The Next Logical Step…

- Is it time to formalize this activity?
- CDOT is considering formation of a Local Roads Data Committee to organize our efforts.
- Potential roles for CoLRDC:
  - Standards development for local road data content, structure and coding.
  - Design of mechanisms to facilitate data exchange and shared data maintenance.
  - Provision of technical assistance to participants in data development, maintenance and exchange.
  - Work with organizations like Co. Counties Inc., GISCo, Co. Municipal League, User Groups, etc

Benefits of a local roads data committee

- Support an NSDI “Framework data layer” for Colo. and make data available for Homeland Security.
- Increased efficiency at all levels of government.
- Reduced costs at all levels of government.
- Use of a common, consistent DB across jurisdictions.
- Improved accuracy/data quality.
- Improved service to other agencies and the public.

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